ABSTRACT OF THE DISCLOSURE

Systems and methods are described for faster processing of multiple spatially-heterodyned direct to digital holograms. A method includes of obtaining multiple spatially-heterodyned holograms, includes: digitally recording a first spatially-heterodyned hologram including spatial heterodyne fringes for Fourier analysis; digitally recording a second spatially-heterodyned hologram including spatial heterodyne fringes for Fourier analysis; Fourier analyzing the recorded first spatially-heterodyned hologram by shifting a first original origin of the recorded first spatially-heterodyned hologram including spatial heterodyne fringes in Fourier space to sit on top of a spatial-heterodyne carrier frequency defined as a first angle between a first reference beam and a first object beam; applying a first digital filter to cut off signals around the first original origin and performing an inverse Fourier transform on the result; Fourier analyzing the recorded second spatially-heterodyned hologram by shifting a second original origin of the recorded second spatially-heterodyned hologram including spatial heterodyne fringes in Fourier space to sit on top of a spatial-heterodyne carrier frequency defined as a second angle between a second reference beam and a second object beam; and applying a second digital filter to cut off signals around the second original origin and performing an inverse Fourier transform on the result, wherein digitally recording the first spatially-heterodyned hologram is completed before digitally recording the second spatially-heterodyned hologram and a single digital image includes both the first spatially-heterodyned hologram and the second spatially-heterodyned hologram.